# Compare and contrast: scale-up VS. scale-out

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As cell-based therapies are rapidly evolving beyond the laboratory scale, the demand for mass production of high quality cells is increasing. Currently a large variety of cell expansion processes are used and described in literature. However, it is extremely difficult to compare them as many MSC subtypes are used in different culture vessels, with different medium compositions, process conditions, etc.
The purpose of this study was to systematically review the available mesenchymal stromal cell (MSC) expansion literature and develop an interactive data visualization tool for the quantitative comparison of the processes. Currently the process database holds information on 73 individual cell expansion processes in 5 different types of culture vessels (microcarrier, (layered) flasks, hollow fiber-, multiplate-, and packed bed-bioreactor), 6 different types of MSCs and many different media compositions. An interactive process performance map was created where the scale, efficiency, cell type, culture method, medium composition, growth rate and load on downstream processing can be explored, providing an integrated perspective on MSC expansion that increases the understanding of scale-up and commercialization of cell production processes.